REMOVAL ASSESSMENT REPORT

FOR

HOPE IRON AND METAL ASSESSMENT
812 NORTH MAIN STREET
HOPE, HEMPSTEAD COUNTY, ARKANSAS

Prepared for

U.S. Environmental Protection Agency Region 6
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EXECUTIVE SUMMARY

On 11 May 2016, the U.S. Environmental Protection Agency (EPA) Emergency Management Branch (EMB) tasked Weston Solutions, Inc. (WESTON®), the EPA Region 6 Superfund Technical Assessment Response Team (START-3) contractor, to perform a Removal Assessment (RA) at the Hope Iron and Metal site located in Hope, Hempstead County, Arkansas, under Technical Direction Document (TDD) No. 5/WESTON-042-16-005. The RA was initiated in response to an Expanded Site Inspection (ESI) Report dated 14 September 2015 completed by the Arkansas Department of Environmental Quality (ADEQ). START-3 RA activities were completed between 6 September and 9 September 2016 and included performing air monitoring, compiling logbook and photographic documentation of on-site RA activities; and collecting soil samples for analytical testing. The Superfund Enterprise Management System (SEMS) Identification (ID) number for the site is ARD000607050.

Soil sampling at the site was conducted 7 through 9 September 2016, and collected at three depth intervals: 0 to 6 inches below ground surface (bgs), 6 to 18 inches bgs, and 18 to 24 inches bgs. At the direction of the EPA On-scene Coordinator (OSC), five-point composite soil samples were also collected at 24 to 48 inches bgs in areas identified in the ADEQ ESI to have polychlorinated biphenyl (PCB) exceedances. A total of 98 soil samples, including duplicate samples, were collected to determine the nature and extent of site-related constituents of concern (COC) in surface and subsurface soils at the site. Soil and liquid samples were shipped to Empirical Laboratories, LLC in Nashville, Tennessee for analysis. Soil and liquid samples were submitted for analysis of metals, PCBs, and semivolatile organic compounds (SVOCs). Soil analytical data were compared to the EPA Risk Screening Levels (RSLs), Resident Soil Target Hazard Quotient (THQ) = 0.1, May 2016 and to the EPA Regional Removal Management Levels (RMLs), Resident Soil THQ = 1.0, May 2016.

Based on the analytical results, aluminum, antimony, cadmium, cobalt, copper, iron, lead, manganese, thallium, PCB, and benzo(a)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene contaminated soil was present around the footprint of the site above EPA RSLs.

The EPA Team conducted air monitoring for particulate matter and volatile organic compounds (VOCs) throughout the soil sampling activities. No readings above action levels were reported.

The EPA Team has prepared this RA Report to describe the technical scope of work that was completed as part of the TDD No. 5/WESTON-042-16-005 under Contract No. EP-W-06-042 for EPA Region 6. The EPA OSC was Nicolas Brescia. The START-3 Project Team Lead (PTL) was José L. Ojeda.

☐ The EPA Task Monitor did not provide final approval of this report prior to the completion date of the work assignment. Therefore, Weston Solutions, Inc. has submitted this report absent the Task Monitor's approval.

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1 INTRODUCTION

Weston Solutions, Inc. (WESTON®), the EPA Region 6 Superfund Technical Assessment and Response Team (START-3) contractor, was tasked by the U.S. Environmental Protection Agency (EPA) Region 6 Emergency Management Branch (EMB) under Contract Number EP-W-06-042 and Technical Direction Document (TDD) No. 5/WESTON-042-16-005 (Appendix F) to conduct a Removal Assessment (RA) at the Hope Iron and Metal site located at 812 North Main Street in Hope, Hempstead County, Arkansas. This RA was initiated in response to an Expanded Site Inspection Report (ESI), dated 14 September 2015, by the Arkansas Department of Environmental Quality (ADEQ). The Superfund Enterprise Management System (SEMS) Identification (ID) number for the site is ARD000607050. A Site Location Map is provided as Figure 1-1. All figures and tables are provided as separate portable document format (PDF) files. START-3 has prepared this report to describe the technical scope of work that was performed during the RA at the Hope Iron and Metal site.

1.1 PROJECT OBJECTIVES

START-3 provided technical support to EPA for the performance of the assessment and to collect data necessary to determine if the site presented a threat to public health or welfare of the United States or the environment in accordance with *40 Code of Federal Regulations (CFR) 300.415.*

The project objective of the Removal Assessment at the Hope Iron and Metal site was to determine the nature and extent of site-related constituents of concerns (COCs) in surface and subsurface soils. Soil samples collected during the RA were compared to EPA Risk Screening Levels (RSLs), Resident Soil Target Hazard Quotient (THQ) = 0.1, May 2016, and EPA Regional Removal Management Levels (RMLs), Resident Soil THQ = 1.0, May 2016.

The objectives of the RA were achieved by evaluating data obtained during the field investigation through the collection of soil samples and reviewing available background information including the ADEQ ESI report. The EPA Team activities included establishing a 50-foot by 50-foot grid system around the site footprint, and collecting five-point composite soil samples at three depth intervals: 0 to 6 inches below ground surface (bgs), 6 to 18 inches bgs,

and 18 to 24 bgs. At the direction of the EPA OSC, soil samples were also collected at 24 to 48 inches bgs in areas identified in the ADEQ ESI to have polychlorinated biphenyl (PCB) exceedances.

1.2 SCOPE OF WORK

The RA scope of work included the following activities:

- Developed a site-specific Quality Assurance Sampling Plan (QASP) and Health and Safety Plan (HASP).
- Established a 50-foot by 50-foot grid around the site footprint and collected five-point composite soil samples using Geoprobe direct push machine.
- Reviewed analytical soil sample data results and compared those analytical results to EPA Risk Screening Levels (RSLs), Resident Soil Target Hazard Quotient (THQ) = 0.1, May 2016, and EPA Regional Removal Management Levels (RMLs), Resident Soil THQ = 1.0, May 2016.

Samples were collected and analyzed in accordance with the START-3 QASP. A copy of the QASP is located in Appendix A. Digital photographs of RA activities are included in Appendix B.

1.3 REPORT FORMAT

This report has been organized as follows:

- Section 1 - Introduction
- Section 2 - Site Background
- Section 3 - Actions Taken
- Section 4 - Analytical Methodology
- Section 5 – Summary of Analytical Results

2 SITE BACKGROUND

Information regarding site location, site description, and potential sources of hazardous material, operational and regulatory history, and summary of previous investigations is presented in the following subsections.

2.1 SITE LOCATION

The Hope Iron and Metal site is located at 812 North Main Street in Hope, Hempstead County, Arkansas, within a commercial/residential area. The geographic coordinates of the site are Latitude 33.675978° North and Longitude 93.594903° West. A Site Area Map is provided as Figure 2-1, and a Site Property Map is provided as Figure 2-2.

2.2 SITE DESCRIPTION

The site encompasses approximately 2.5 acres, and is located in Section 28, Township 12S, Range 24W, Lots 1, 2, 3, 4, 5 of Block 2 of London Subdivision, according to the Hempstead County Central Appraisal District. The site is bordered by North Walnut Street and a Union Pacific railroad to the east, East Greenwood Street to the north, North Main Street to the west, and the property owner's residence to the south-southeast. Site topography and surface water drainage flows into ditches on the west and north sides of the site, which is then directed north into Black Creek that eventually flows into Bois d'Arc Creek, 10 miles from the site. A former petroleum, oil, and lubricant (POL) facility was located on the southeast portion of the property. Two corrugated metal buildings are located on-site. Building 1 is located in the northwest section of the site and appears to be abandoned. Building 2 is located in the southwest section of the site and is currently operating as a small automotive repair shop. Residential areas are located to the east, south, and west.

2.3 POTENTIAL SOURCES OF HAZAROUS MATERIALS

Information concerning the known or potential hazardous substance source areas at the site and the COCs thought to be associated with each source are presented in the following section. Based on the ADEQ ESI report, dated 14 September 2015, former site activities that contributed to potential sources include the following:

- Potential presence of hazardous substance contamination due to typical historic operations associated with metal salvage yards.
  - The site operated as a metal salvage yard from approximately 1982 until 1992.
- PCB-containing electrical equipment were received, stored, and drained at the site.
- Rubber and other insulation materials historically were burned off copper wiring.
- A 1,000-gallon underground storage tank (UST) was located on-site near Building 2.

2.4 OPERATIONAL AND REGULATORY HISTORY

As outlined in the ADEQ ESI report, the site was operated as Hope Iron and Metal (a metal salvage yard) from approximately 1982 until 1992. The former site owner stated the site had been used as a metal salvage yard for several decades prior to their ownership. At various times in the past, east portions of the site currently owned by Union Pacific Railroad were leased and used for metal salvage operations. Records of hazardous waste being generated at the site were not located during the ESI; however, salvage operations, which included storing and draining PCB-containing electrical equipment, were conducted on-site for several decades.

During the operation of Hope Iron and Metal as a salvage yard, it was common practice to burn rubber and other insulation materials off of copper wiring. Outdated electrical transformers were also commonly received and stored on-site. The oil contained within the electrical transformers would be drained on the ground prior to scrapping and selling the metal. No specific areas on-site were designated as burn pits or for oil draining; however, metal items, including copper wire and electrical transformers, were generally concentrated near the center of the site. These items were burned or drained wherever they could be most easily processed by employees. The exact location where the metals were received, stored, and scrapped changed regularly.

2.5 SUMMARY OF PREVIOUS INVESTIGATIONS

The ADEQ submitted a Potential Hazardous Waste Site Identification Form for Hope Iron and Metal in November 2009. Upon approval from the EPA, the ADEQ commenced a Preliminary Assessment (PA) investigation; the PA was submitted to the EPA in June 2010. The EPA subsequently provided the ADEQ with a Superfund Site Strategy Recommendation (SSSR) form, dated 2 November 2010, to recommend that a Site Inspection (SI) Task Work Plan (TWP)

be developed for the site. The ADEQ submitted the SI TWP for Hope Iron and Metal in November 2011, and the EPA subsequently provided the ADEQ with a SSSR, dated 14 May 2012, approving the SI TWP. The SI sampling event was conducted on 22 May 2012, and the SI was submitted to the EPA on 5 September 2012. The EPA subsequently provided the ADEQ with a SSSR form dated, 10 September 2013, approving the ESI. The ESI TWP was submitted to EPA on 3 November 2014, and the EPA subsequently provided ADEQ with the SSSR form, approving it on 15 January 2014. The ESI sampling event was conducted on 31 March 2015.

3 ACTIONS TAKEN

On 5 July 2016, the EPA Team conducted a preliminary reconnaissance of the site to observe current site conditions, to determine the current site property owner, and to discuss project objectives for the RA. Contact was made with the current property owner, who resides in a residential structure on-site, and an Access Agreement to conduct the RA was obtained.

Following the preliminary reconnaissance, the EPA Team developed a sampling strategy that included establishing a 50-foot by 50-foot sampling grid surrounding the site footprint. On 14 August 2016, the EPA Team mobilized to the site and established 68, 50-foot by 50-foot grids, utilizing a handheld Global Positioning System (GPS), throughout the site. The corner points of each grid were marked with pin flags and labeled. A Soil Sample Location Map is provided as Figure 3-1. Soil sampling was scheduled to begin 15 August 2016, but was rescheduled to a later date due to heavy rains in the area.

From 6 through 9 September 2016, the EPA Team conducted soil sampling activities at the site. Sampling activities were completed in accordance with the START-3 QASP. Any deviations to the QASP were discussed with the EPA OSC and noted in the field logbook. Site logbook notes are included in Appendix C. Sample nomenclature reflected the property site ID, grid location, sample depth, date, sample matrix, and sample type (field sample vs. duplicate sample). Detailed soil sampling information is included in the following subsections.

3.1 SOIL SAMPLING

The EPA Team conducted soil sampling to determine the nature and extent of hazardous substances associated with metals, PCBs, and SVOCs in on-site soils. During sampling activities, 98 composite subsurface soil samples (94 normal samples and 4 field duplicate samples) were collected at three depth intervals: 0 to 6 inches bgs, 6 to 18 inches bgs, and 18 to 24 inches bgs; and at the direction of the EPA OSC, soil samples were also collected at 24 to 48 inches bgs in areas identified in the ADEQ ESI to have PCB exceedances.

Five-point composite samples were collected using a Geoprobe direct push machine to collect a continuous soil core from each grid point to a depth of 48 inches. A sampling rod and dedicated

acetate liner was utilized for each aliquot to eliminate cross contamination. Once the sampling rod was removed from the borehole, and the acetate liner cut open, each sampling interval was placed in a dedicated reclosable gallon plastic bag. Samples were homogenized per interval from the five aliquots within each grid and immediately transferred into pre-cleaned 4-ounce glass jars with a Teflon-lined lid. Soil samples were then stored in a cooler with ice.

The sampling rods were decontaminated between aliquots and an equipment rinsate blank was collected each day to demonstrate that equipment decontamination procedures were performed effectively.

Before proceeding to the next sampling grid, each of the five Geoprobe boreholes were backfilled with bentonite chips to prevent ingress of contaminants. Excess cuttings from the boreholes were stockpiled on-site for future disposal during planned excavation activities.

Based on a review of historical data and at the direction of EPA, representative samples were collected from the following 41 grids during this RA sampling event.

A1	A2	A3	A4	A5	A6	A7	A8
B1	B2	B3	B4	B5	B6	B7	B8
C2	C3	C4	C5	C6	C7	C8	D2
D3	D4	D5	D6	D7	D8	E2	E3
E4	E5	E6	E7	F3	F7	G8	H9
J10							

4 ANALYTICAL METHODOLOGY

Empirical Laboratories in Nashville, Tennessee, conducted sample analyses, and data validation was performed by the EPA Team as part of the TDD requirements. These tasks were conducted in accordance with the WESTON Quality Assurance Program and the EPA Team QASP, prepared under TDD No. 5/WESTON-042-16-005.

A standard data management system that included using bound field logbooks, site photographs, sample management and tracking procedures, document control, and inventory procedures for the laboratory data was utilized. SCRIBE software was utilized to manage and track sample information for samples submitted to the participating laboratories.

Information regarding laboratory analyses and data validation is presented in the following subsections.

4.1 SOIL SAMPLE ANALYSES

The EPA Team submitted a total of 98 soil samples for the following parameters:

- TAL Metals by Method 6020
- Mercury by Method 7471A
- PCBs by Method 8082A
- SVOCs by Method 8270D

Empirical Laboratories reported the analytical results in data packages meeting EPA Team requirements for importing and managing in SCRIBE. The laboratory documentation in these data packages includes records of instrument readings, calculations, calibrations, and quality assurance checks.

Appendix D includes the analytical data packages submitted by Empirical Laboratories.

4.2 DATA VALIDATION

The EPA Team performed data review and validation in accordance with EPA National Functional Guidelines for Inorganic Superfund Data Review, August 2014. The data packages were reviewed to verify they met the technical requirements and Quality Assurance (QA)

guidelines established for the respective analytical methods. The following list includes the items evaluated for each laboratory sample delivery group (as applicable):

- The completeness of the laboratory reports, verifying that all required components of the reports were present and that the samples indicated on the accompanying chain-of-custodies were addressed in the reports.
- The sample receipt temperature was reviewed to verify the cooler temperature was within acceptable range.
- Holding times were reviewed to verify the samples were extracted and/or analyzed within the required holding time.
- The case narrative was reviewed for any noted sample receipt, sample preservation, and/or analytical exceptions (instrument performance checks, initial calibration, initial and continuing calibration verification checks, etc.).
- Laboratory blanks were reviewed to determine whether laboratory contamination was present.
- Internal standards were reviewed to verify the recoveries were within the acceptable range.
- Laboratory control samples and/or laboratory control sample duplicates were reviewed to verify the accuracy of the method.
- Matrix spike/matrix spike duplicate samples were reviewed to determine whether matrix interference was present and to determine if laboratory precision was within the acceptable range.
- Serial dilution samples were reviewed to verify that the percent difference was within the acceptance criteria.
- Field duplicates were reviewed to verify that field precision was within the acceptable range.
- Reporting limits (Method Detection Limit [MDL], Limit of Determination [LOD], and Limit of Quantitation [LOQ]) were reviewed to confirm they were adjusted to reflect dilution factors, where applicable.
- Sample results were reviewed to confirm that the detected concentration was within the instrument calibration range. If the concentration exceeded the instrument calibration range, the data were reviewed to determine if the sample was reanalyzed at a secondary dilution.

The EPA Team reviewed the analytical results to verify that the data were acceptable for their intended use in meeting the objectives of the project. The analytical results for the samples collected for this project are acceptable for use with qualifiers assigned during validation. Data validation reports are included in Appendix E.

5 SUMMARY OF ANALYTICAL RESULTS

Soil sample analytical information is presented in the following subsections. Soil analytical data were compared to the EPA Risk Screening Levels (RSLs), Resident Soil Target Hazard Quotient (THQ) = 0.1, May 2016, and EPA Regional Removal Management Levels (RMLs), Resident Soil THQ = 1.0, May 2016.

RSLs are risk-based concentrations considered to be protective for humans and sensitive groups over a lifetime; however they are not always applicable to a particular site and do not address non-human health endpoints, such as ecological impacts. RSLs are not de facto cleanup standards but are typically used to help identify site contaminants and identify areas that may require further assessment. RSLs are provided with THQs of 0.1 and 1.0. Generally, if a site contains only one contaminant of concern, the THQ=1.0 RSLs can be used; however if the site contains unknown or multiple COCs the more conservative THQ=0.1 RSLs values may be preferred.

RMLs are risk-based concentrations used to help define site COCs and areas that may warrant a removal action under CERCLA. RMLs are not meant to define protective levels and are not de facto cleanup levels. RMLs are provided with HQs of 1.0 and 3.0. RMLs with a THQ=3.0 are are generally considered the upper target risk levels for non-cancer COCs. RMLs with a THQ=1.0 are more conservative and may be more appropropriate for those sites with multiple COCs.

A summary of soil analytical results compared to Residential RSLs (THQ=0.1) and RMLs (THQ=1.0) included as Table 5-1 and Table 5-2, respectively. These RSL and RML screening levels were used in an effort to compare site sample results to the lower (more conservative) screening values.

5.1 SOIL SAMPLES RESULTS

5.1.1 RSL Soil Samples Results

During field assessment activities, a total of 98 soil samples (including field duplicate samples) were collected and analyzed from 41 grids established around the footprint of the site to determine the nature and extent of hazardous substances in soil. A review of the soil analytical results indicated that prevalent hazardous substances, including aluminum, antimony, cadmium, cobalt, copper, iron, lead, manganese, thallium, PCBs, benzo(a)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene, were detected at levels exceeding EPA RSLs criteria (Residential Soil [THQ = 1.0], May 2016). A summary of soil analytical results using RSLs for comparison is included as Table 5-1. Figure 5-1.1, the RSL Soil Sample Exceedance Map, labels grids with analytical results exceeding EPA Residential Soil RSLs THQ=0.1. Individual exceedance grid maps for aluminum, antimony, cadmium, cobalt, copper, iron, lead, manganese, and thallium have been prepared as Figures 5-2.1 through 5-10.1.

As shown in Figure 5-8.1, lead was detected in 22 grids above the EPA RSL of 400 milligrams per kilogram (mg/kg). The 22 grids included four grids at 6 inches bgs (B1, D4, E3, and E4); four grids at 18 inches bgs (D2, D8, E5, and F7); eight grids at 24 inches bgs (A7, B2, B7, C7, C8, D3, D7, and E6); and six grids at 48 inches bgs (A6, B6, B8, D5, D6, and E7). Lead concentrations ranged from 418 mg/kg (D4 at a depth of 18 inches bgs) to 7,790 mg/kg (F7 at a depth of 18 inches bgs).

Aroclor-1254 and Aroclor-1260 were detected in 27 grids above the EPA RSL of 0.12 mg/kg and 0.24 mg/kg, respectively, which is depicted as Figure 5-11.1, RSL Soil Sample Results Map – Polychlorinated Biphenyls (PCBs). The 27 grids included five grids at 6 inches bgs (A1, C3, D4, E3, and F3); four grids at 18 inches bgs (B1, D2, E6, and H9); twelve at 24 inches bgs (A8, B2, B6, C2, C5, C7, D3, D6, D8, E4, E5, and F7); and six at 48 inches bgs (A7, B7, B8, D5, D7, and E7).

Benzo(a)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene were detected in 25 grids above the EPA RSL of 0.16 mg/kg, 0.016 mg/kg, and 0.16 mg/kg, respectively, which is depicted in Figure 5-12.1, RSL Soil Sample Results Map – Semivolatile Organic Compounds (SVOCs).

The 25 grids included five grids at 6 inches bgs (A1, B1, D2, E2, and E3); three at 18 inches bgs (C3, D8, and E5); ten at 24 inches bgs (A8, B5, B6, B8, C7, D3, D4, E6, F3, and F7); and seven at 48 inches bgs (A7, C6, C8, D5, D6, D7, and E7).

Based on the RA analytical data, approximately 8,148 cubic yards of on-site soil exhibited concentrations of metals, PCB and/or SVOC constituents at levels above EPA Residential Soil RSLs THQ=0.1.

5.1.2 RML Soil Samples Results

A review of the soil analytical results indicates that prevalent hazardous substances, including aluminum, antimony, cadmium, cobalt, copper, iron, lead, manganese, thallium, PCBs, and benzo(a)pyrene, were detected at levels exceeding EPA RMLs (Resident Soil [THQ = 1.0], May 2016). A summary of soil analytical results using RMLs for comparison is included as Table 5-2. Figure 5-1.2, the RML Soil Sample Exceedance Map, labels grids with analytical results exceeding EPA RMLs. Individual exceedance grid maps for aluminum, antimony, cadmium, cobalt, copper, iron, lead, manganese, and thallium have been prepared as Figures 5-2.2 through 5-10.2.

As shown in Figure 5-8.2, lead was detected in 22 grids above the EPA RML of 400 milligrams per kilogram (mg/kg). The 22 grids included four grids at 6 inches bgs (B1, D4, E3, and E4); four grids at 18 inches bgs (D2, D8, E5, and F7); eight grids at 24 inches bgs (A7, B2, B7, C7, C8, D3, D7, and E6); and six grids at 48 inches bgs (A6, B6, B8, D5, D6, and E7). Lead concentrations ranged from 418 mg/kg (D4 at a depth of 18 inches bgs) to as high as 7,790 mg/kg (F7 at a depth of 18 inches bgs).

Aroclor-1254 and Aroclor-1260 were detected in 11 grids above the EPA RML of 1.2 mg/kg and 24.0 mg/kg, respectively, which is depicted as Figure 5-11.2, RML Soil Sample Results Map – PCBs. The 11 grids included three grids at 6 inches bgs (B1, D2, and E4); one grid at 18 inches bgs (E6); three at 24 inches bgs (D3, D6, and E5); and four at 48 inches bgs (A7, D5, D7, and E7).

Benzo(a)pyrene was detected in one grid (E6 at 18 inches bgs) above the EPA RML of 1.6 mg/kg and depicted as Figure 5-12.1, RML Soil Sample Results Map – Semivolatile Organic Compounds (SVOCs).

Based on the RA analytical data, approximately 4,814 cubic yards of on-site soil exhibited concentrations of metals, PCB and/or SVOC constituents at levels above EPA Residential Soil RMLs THQ=1.0.

5.2 AIR MONITORING RESULTS

The EPA Team utilized a THERMO Data Ram DR-4000 to conduct air monitoring for particulate matter during soil sampling activities. Air monitoring equipment was utilized in active sampling areas and was programed to log particulate concentrations throughout the day. Readings were analyzed to determine average concentrations, peaks, and exceedances of particulates in the air at each sampling location. No readings above action levels were detected.